

Notice of Allowability

Application No.

09/596,757

Examiner

Jacqueline Wilson

Applicant(s)

WANG ET AL.

Art Unit

2612

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to amendment received 05/10/05.
2. ☒ The allowed claim(s) is/are 1-11, 13-18 and 20-30.
3. ☒ The drawings filed on 15 June 2000 are accepted by the Examiner.
4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☐ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 6. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO-1449 or PTO/SB/08),
Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit
of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☐ Interview Summary (PTO-413),
Paper No./Mail Date _____
7. ☐ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____

DETAILED ACTION

Allowable Subject Matter

1. Claims 1-11, 13-17, 18, and 20-30 are allowed.

Regarding Claim 1, the prior art neither teaches nor fairly suggests an image sensor comprising, a plurality of image sensing pixel portions; and plurality of image processing portions; each said image sensing pixel portion including a photoreceptor, which has a first sensitivity to light and produces charge based on an amount of incident light, and associated portion for said photoreceptor, **which associated portion selectively receives charge from said photoreceptor but which by itself has a second sensitivity to light different than said first sensitivity to light and produces charge based on an amount of incident light**, an in-pixel follower transistor, and an in-pixel select transistor; and **wherein each said image processing portion includes circuitry that produces an output indicative of both an amount of charge received by said associated portion, and amount of charge received by said photoreceptor**, as claimed in Claim 1.

Regarding Claim 13, the prior art neither teaches

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Regarding Claim 13, the prior art neither teaches nor fairly suggests imaging a scene by simultaneously obtaining both a high sensitivity signal and a low sensitivity signal in each of a plurality of pixels of an image sensing device, using an integration period which is at least 80% overlapping for both high sensitivity signal and a low sensitivity signal, both the high and low sensitivity signals being obtained within the pixel itself, wherein the obtaining comprises providing both a photosensor and an associated

Art Unit: 2612

device that is associated with the photosensor which normally obtains charge from the photosensor, **the photosensor obtaining the high sensitivity signal and the associated device obtaining the low sensitivity signal**, and outputting both the high and low sensitivity signals, as claimed in Claim 13.

Regarding Claim 18, the prior art neither teaches nor fairly suggests a single continuous substrate of semiconductor material, an image sensor portion, an image processing portion, wherein the image processing portion includes a plurality of sample and hold circuits therein, including a reset sample and hold which samples a reset level, **associated device sample and hold circuit which samples the level of the associated device**, and a photoreceptor sample and hold which samples a level of the photoreceptor, a control portion, wherein each of the pixels and the image sensor including a photoreceptor, a transfer gate, and an associated portion that selectively received charge from the photoreceptor via the transfer gate, a reset transistor, a follower transistor, couple to the associated portion, and operating to buffer the value of the associated portion, and a selection transistor, coupled to the control portion, the control portion controlling the selection transistor to produce an output from the specified pixel such that a level of the associated portion is first sensed, then values are coupled from the photoreceptor into the floating diffusion and to sample values on the floating diffusion and to sample values on the floating diffusion, the values provided to the image processing portion, as claimed in claim 18.

Regarding Claim 27, the prior art neither teaches nor fairly suggests a method of obtaining images of different sensitivities, comprising: floating diffusion associated with

a photogate; **first sampling a level of integration which has occurred in said floating diffusion and then transferring charge from said photogate to said floating diffusion and sampling the level that has occurred in said photogate;** outputting two values indicative respectively of a **low sensitivity signal and a high sensitivity signal that were integrated at substantially the same time, based on floating diffusion signal and said photogate signal.**

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jacqueline Wilson whose telephone number is (571) 272-7322. The examiner can normally be reached on 8:30am-5:00pm (alternate Fridays off).

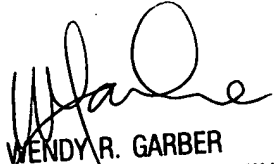
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wendy Garber can be reached on (571) 272-7308. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Application/Control Number: 09/596,757
Art Unit: 2612

Page 5

JW
05/19/05



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